

Name: \_\_\_\_\_ Teacher: \_\_\_\_\_ School: \_\_\_\_\_

**Grade 8: Lesson 1 Writing expressions using symbolic language.**

**No calculator required.**

Write each of the following statements using symbolic language.

1. Bruce bought two books. One book costs \$4.00 more than three times the other. Together, the two books cost him \$72.
2. Janet is three years older than her sister Julie. Janet's brother is eight years younger than their sister Julie. The sum of all of their ages is 55 years.
3. The sum of three consecutive integers is 1,623.
4. One number is six more than another number. The sum of their squares is 90 .
5. When you add 18 to  $\frac{1}{4}$  of a number, you get the number itself.

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**Grade 8: Lesson 2 - Writing Mathematical Expressions and Identifying Linear and Nonlinear Expressions**  
**No calculator required.**

Write each of the following statements as a mathematical expression, **AND** state whether the expression is linear or nonlinear. If it is nonlinear, then explain why.

1. A number decreased by three squared.
2. The quotient of two and a number, subtracted from seventeen.
3. The sum of thirteen and twice a number.
4. 5.2 more than the product of seven and a number.
5. The sum that present the number of tickets sold if 35 tickets were sold Monday, half of the remaining tickets were sold on Tuesday, and 14 tickets were sold on Wednesday.
6. The product of 19 and a number, subtracted from the reciprocal of the number cubed. If it is nonlinear, then explain why



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**Grade 8: Lesson 4 - Solving Linear Equations with Rational Number Coefficients**

**No calculator required but may be used to check calculations.**

Solve each of the following and provide explanation as requested.

1. Solve the linear equation  $x + 4 + 3x = 72$ . State the property that justifies your first step and why you chose it.
2. Solve the linear equation  $x + 3 + x - 8 + x = 55$ . State the property that justifies your first step and why you chose it.
3. Solve the linear equation  $\frac{1}{2}x + 10 = \frac{1}{4}x + 54$ . State the property that justifies your first step and why you chose it.
4. Solve the linear equation  $17 - x = \frac{1}{3} \cdot 15 + 6$ . State the property that justifies your first step and why you chose it.
5. Alysha solved the linear equation  $2x - 3 - 8x = 14 + 2x - 1$ . Her work is shown below. When she checked her answer, the left side of the equation did not equal the right side. Find and explain Alysha's error, and then solve the equation correctly.

$$\begin{aligned}2x - 3 - 8x &= 14 + 2x - 1 \\-6x - 3 &= 13 + 2x \\-6x - 3 + 3 &= 13 + 3 + 2x \\-6x &= 16 + 2x \\-6x + 2x &= 16 \\-4x &= 16 \\-\frac{4}{-4}x &= \frac{16}{-4} \\x &= -4\end{aligned}$$

